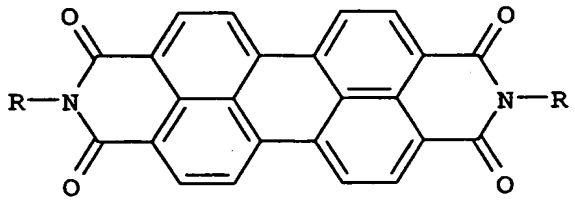
Preparation of perylene-3,4:9,10-tetracarboxylic diimides and perylene-3,4:9,10-tetracarboxylic dianhydride and also of naphthalene-1,8-dicarboximides

Abstract

A process for preparing perylene-3,4:9,10-tetracarboxylic diimides of the general formula I



I

where

R is C_1-C_{30}-alkyl whose carbon chain may be interrupted by one or more -O- moieties and/or which may be substituted by one or more substituents selected from the group consisting of C_5-C_8-cycloalkyl (which may be substituted by one or more C_1-C_6-alkyl substituents), phenyl or phenyl-C_1-C_6-alkyl (which may each be substituted by one or more C_1-C_{18}-alkyl and/or C_1-C_6-alkoxy substituents), $-OCOR^1$, $-N(R^1)_2$, $-SO_2NH_2$, $-SO_2N(R^1)_2$, $-CON(R^1)_2$ and $-COOR^1$;

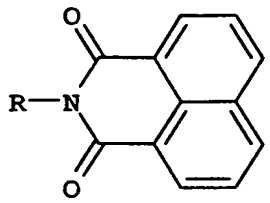
C_5-C_8-cycloalkyl whose carbon skeleton may be interrupted by one or more moieties selected from the group consisting of -O-, -S- and $-NR^2$- and/or which may be substituted by one or more C_1-C_6-alkyl substituents;

phenyl, phenyl-C_1-C_6-alkyl, naphthyl or hetaryl, which may each be substituted by one or more substituents selected from the group consisting of C_1-C_{18}-alkyl, C_1-C_6-alkoxy, phenylazo, naphthylazo, pyridylazo, pyrimidylazo, cyano, $-N(R^1)_2$, $-CON(R^1)_2$ and $-COOR^1$;

R^1 is C_1-C_6-alkyl, C_5-C_8-cycloalkyl, phenyl or phenyl-C_1-C_6-alkyl;

R^2 is C_1-C_6-alkyl, phenyl or phenyl-C_1-C_6-alkyl,

by dimerizing a naphthalene-1,8-dicarboximide of the formula II



II

comprises effecting said dimerizing in a reaction medium consisting essentially of an apolar aprotic organic solvent and an alkali metal base and subsequently reoxidizing the resulting alkali metal salt of the leuco form of the perylene-3,4:9,10-tetracarboxylic diimide in the presence of a polar solvent,

and also preparation of perylene-3,4:9,10-tetracarboxylic dianhydride and naphthalene-1,8-dicarboximides.